

## INTERNATIONAL SEARCH REPORT

International Application No.  
PCT/IB2004/002543

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H01L43/10 H01L43/08 G01R33/09

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H01F H01L G01R G11B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, INSPEC, COMPENDEX

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 463 516 A (VALET ET AL) 31 October 1995 (1995-10-31) column 3, line 22 - line 57; figures 1,2 column 5, line 23 - column 6, line 39; figure 9 column 7, line 4 - line 8	1,9-14, 16,17
X	EP 0 724 303 A (TOSHIBA KK) 31 July 1996 (1996-07-31) column 5, line 34 - column 7, line 40 column 10, line 14 - line 24; figure 10; example 1 ----- -/--	1,9-14, 16,17

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

## \* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \*G\* document member of the same patent family

Date of the actual completion of the international search

22 March 2005

Date of mailing of the international search report

06/04/2005

Name and mailing address of the ISA

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 898 315 A (HITACHI LTD) 24 February 1999 (1999-02-24) paragraph '0028! - paragraph '0033!; figures 1-6	1,3, 9-13,16
A	paragraph '0039! - paragraph '0043!; figures 7-10	18-23
X	----- US 6 353 317 B1 (GREEN ET AL) 5 March 2002 (2002-03-05) cited in the application column 3, line 49 - column 4, line 29; figure 4	16,17
A	column 6, line 58 - column 7, line 41	1-8, 12-15
A	----- EP 0 951 047 A (CANON KK) 20 October 1999 (1999-10-20) paragraph '0073!; figure 12A paragraph '0086! - paragraph '0090!; figure 14	1-8, 12-16
X	----- US 6 103 406 A (KUMAGAI) 15 August 2000 (2000-08-15)  column 3, line 14 - column 4, line 19; figure 1 column 6, line 61 - column 8, line 67; figures 4,5	1,9-13, 16, 18-20, 22,23
X	----- US 2002/114974 A1 (CAREY ET AL) 22 August 2002 (2002-08-22)  paragraph '0040! - paragraph '0042!; figure 2 paragraph '0048! -----	1,9-13, 16, 18-20,22

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## Box II Observations where certain claims were found unsearchable (Continuation of Item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box III Observations where unity of invention is lacking (Continuation of Item 3 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☒ No protest accompanied the payment of additional search fees.

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-17

Manufacturing method of a magnetoresistive element  
comprising chemical etching to form pores in a semiconductor  
substrate and applying nanoparticles to the pores  
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2. claims: 18-23

Spin valve comprising free magnetic layer, permanent  
magnetic layer, and spacer layer comprising metallic  
nanoparticles in semiconducting/dielectric material  
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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No  
PCT/IB2004/002543

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5463516	A	31-10-1995	FR 2692711 A1 DE 69327367 D1 DE 69327367 T2 EP 0577469 A1 JP 3383007 B2 JP 6097534 A NO 932295 A	24-12-1993 27-01-2000 21-06-2000 05-01-1994 04-03-2003 08-04-1994 27-12-1993
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